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Quantifying Culture: an Information-Theoretic Measure of how Memes Flow Through Minds

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Abstract

Cultural evolution is changing humanity much faster than genetic evolution, but at present we lack a way to empirically ground models of cultural evolution in a quantitative, content-agnostic way analogous to counting alleles in models of genetic evolution. A way to measure what information ends up in which minds would permit quantitative models of the many different processes that govern the flow of memes through minds. We offer a method for estimating the amount of information retained based on previous exposure to a cultural artifact. Entropy estimates that are generated based on a test set from e.g. Harry Potter will differ between a treatment group (Readers, people who have read Harry Potter), and a control group (Non-Readers). This difference is an expression, in bits, of how much information from the book stored in Readers' minds and therefore capable of influencing behavior.